MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

SUPPLEMENTARY EXAMINATION

TRIMESTER 1, 2015 / 2016

PBC0016–BASIC COMPUTING AND PROGRAMMING

(Foundation in Engineering)

19 NOV 2015
2.30 PM – 4.30 PM
(2 HOURS)

INSTRUCTIONS TO STUDENT

1. This question paper consists of **FIVE** printed pages with **FOUR** questions.
2. Answer **ALL** questions.
3. Write your answers in the Answer Booklet.

QUESTION 1

(a) What is a server? List **THREE (3)** services provided by a server.

[5 marks]

(b) Distinguish between data and information. Give an example of each.

[4 marks]

(c) Describe the following types of memory:

(i) Read-Only Memory (ROM) [2 marks]

(ii) Complementary Metal-Oxide Semiconductor (CMOS) [2 marks]

(iii)Flash [2 marks]

(d) What is a machine cycle? Describe what happens during each step in the machine cycle.

[6 marks]

(e) In your opinion, which type of computer (laptop, tablet or desktop) is the best for daily usage? Justify your answer.

[4 marks]

QUESTION 2

(a) Distinguish between impact and non-impact printers. Give an example each.

[4 marks]

(b) Explain how microfilm and microfiche are used. Describe **TWO (2)** advantages of using these technologies.

[6 marks]

(c) In your opinion, explain why home or business users might choose cloud computing.

[4 marks]

(d) Describe **THREE (3)** security tools used by operating systems.

[6 marks]

(e) Consider a 128 x 128 grayscale image quantized at 8 bits per pixel.

(i) How many bits are required to store the digitized image?

[3 marks]

(ii) How much time is needed to transmit the image over 56kbps modem?

[2 marks]

Continued ....

QUESTION 3

(a) State **FOUR (4)** device types you need for successful wired/wireless communications system.

[4 marks]

(b) In the context of cellular networks, briefly explain the differences among 3G, 4G and 5G cellular transmissions.

[6 marks]

(c) Discuss whether you can use an IP address to determine a computer or device's location.

[4 marks]

(d) Describe **TWO (2)** advantages and **ONE (1)** disadvantage of using fiber-optic cables.

[6 marks]

(e) Define the term, Computer-based Training (CBT). List **THREE (3)** advantages of CBT over traditional training.

[5 marks]

QUESTION 4

(a) Define the following:

(i) Programming language [1 mark]
(ii) Computer program [1 mark]

(b) Construct logical expressions to represent each of the following conditions:
(Note: You may have to use **logical connectives to join expressions**)

	Conditions	Expression	
E.g.	`weight` is greater than 10	`weight > 10`	
(i)	$10 < x \leq 45$		[1 mark]
(ii)	$y < -10,\ y \geq 15$		[1 mark]
(iii)	`size` must be 's', 'm', or 'l'		[1 mark]
(iv)	`counter` is positive and is an even number		[1 mark]

Continued ....

(c) The following program calculates the Grade Point Average (GPA) for any given trimester. Unfortunately, a few lines have been accidentally deleted. Complete the source code by filling in the blank spaces. The output of the program can be seen in Table 4(c).

The formula to calculate GPA is given as:

$$\text{GPA} = \frac{\sum(\text{Grade Point Equivalent} \times \text{Credit Hours})}{\text{Total Credit Hours}}$$

Assume all subjects are 3 credit hours.

[11 marks]

```
#include ____(0)____

int main()
{
    float gpa, total_points = 0, points;
    int num_subjects, i;
    char grade;

    _____(i)_____
    scanf("%d", &num_subjects);

    for (i=1; i<=___(ii)___; i++)
    {
        printf("Please enter the grade of Subject %d: ", ___(iii)___);
        scanf(" %c", &grade);              //A, B, C, D of F only

        if (_____(iv)_____)                //grade is 'A' or 'a'
            points = 4 * 3.00;             //point for A is 4

        else if (_____(v)_____)            //grade is 'B' or 'b'
            points = 3 * 3.00;             //point for B is 3

        else if (_____(vi)_____)           //grade is 'C' or 'c'
            points = 2 * 3.00;             //point for C is 2

        else if (_____(vii)_____)          //grade is 'D' or 'd'
            points = 1 * 3.0;              //point for D is 1

        else if (_____(viii)_____)         //grade is 'F' or 'f'
            points = 0 * 3.00;             //point for F is 0
        else {
            i = i-1;
            points = 0;
        }

        total_points = _____(ix)_____

    }

    gpa = total_points/(3.00*num_subjects);
    printf(_____(x)_____);


    _____(xi)_____                         //necessary to end program properly
}
```

Continued ....

Note:

- You do not have to rewrite the entire source code, just the lines that are missing.
- Output statements should follow the sample output exactly. Marks will be deducted for any deviations.

Example:

```
(0)     <stdio.h>
```

Table 4(c)

Example 1	`Enter the number of subjects taken: 1`
	`Please enter the grade of Subject 1: B`
	`Your GPA is 3.00`

Example 2	`Enter the number of subjects taken: 2`
	`Please enter the grade of Subject 1: A`
	`Please enter the grade of Subject 2: b`
	`Your GPA is 3.50`

(d) Malaysia's Customs charges import duty when people buy things from online shops located overseas (e.g. Amazon, Ebay, Taobao). The formula is given as:

$$\text{Duty} = \begin{cases} 0\% & \text{if total price} \leq 500 \\ 6\% & \text{if total price} > 500 \end{cases}$$

Write a complete C program that is able to calculate the total, import duty and total with duty of a few imported goods. Examples of results are shown in Table 4(d). (Note: You must use the `for` loop in your program)

[8 marks]

Table 4(d)

Example 1	`Number of items imported: 2`
	`Price of Item 1: 100`
	`Price of Item 2: 400`
	`Total: 500.00`
	`Duty: 0.00`
	`Total with Duty: 500.00`

Example 2	`Number of items imported: 2`
	`Price of Item 1: 300`
	`Price of Item 2: 400`
	`Total: 700.00`
	`Duty: 42.00`
	`Total with Duty: 742.00`

End of Paper